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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,676	10/30/2001	Shen-Ge Wang	D/A1450	3387

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EXAMINER	
HUNTSINGER, PETER K	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/020,676	WANG ET AL.	
	Examiner	Art Unit	
	Peter K. Huntsinger	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-6 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 19 August 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 8/02, 5/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 2, and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Trask U.S. Patent 6,249,355.

Referring to claim 1, Trask discloses a method of constructing a halftone screen comprising: defining a halftone screen frequency and screen angle according to a predetermined requirement (col. 13, lines 54-67); defining a desired subcell having the predetermined frequency and screen angle requirement, wherein the subcell is substantially specified by two spatial vectors v.sub.1=(x.sub.1, y.sub.1) and v.sub.2=(x.sub.2, y.sub.2), wherein x.sub.1, x.sub.2, y.sub.1, and y.sub.2 are real numbers (col. 9, lines 59-67); forming a supercell comprising an array of the subcells, wherein the supercell is substantially specified by two spatial vectors u.sub.1 and u.sub.2 and wherein the relationship between the supercell and the subcell satisfies:k.sub.1v.sub.1+k.sub.2v.sub.2=u.sub.1- , and

k.sub.3v.sub.1+k.sub.4v.sub.2=u.sub.2, where k.sub.1, k.sub.2, k.sub.3 and k.sub.4 are integer values (Fig. 5, col. 12-13, lines 59-67, 1-13).

Referring to claim 2, Trask discloses the method of claim 1, further comprising: using particular integer values for k.sub.1, k.sub.2, k.sub.3 and k.sub.4 and u'.sub.1(m.sub.1, n.sub.1) and u'.sub.2(m.sub.2, n.sub.2), where m.sub.1, n.sub.1, m.sub.2 and n.sub.2 are integers to solve the supercell-subcell relationship for v.sub.1' and v.sub.2', where v'.sub.1 and v'.sub.2 are approximate solutions of the desired subcell v.sub.1 and v.sub.2; and comparing v.sub.1 and v.sub.2 with v.sub.1' and v.sub.2' (col. 10, lines 20-43).

Referring to claim 6, Trask discloses a method of constructing a halftone screen comprising: selecting a frequency and screen angle of interest (col. 13, lines 54-67); identifying a subcell by spatial vectors which satisfies the selected frequency and screen angle of interest (col. 9, lines 59-67); forming a supercell comprising an array of the subcells, wherein an integer relationship exists between the supercell and the subcells; solving the integer relationship (Fig. 5, col. 12-13, lines 59-67, 1-13); testing one of any resulting solutions according to any additional constraints or tolerances (col. 15, lines 30-36); and if any of the resulting solutions satisfies the testing, creating a halftone screen using the tested solution (col. 16, lines 25-27).

2. Claims 1, 3-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Cheng et al. Publication US 2002/0089708.

Referring to claim 1, Cheng et al. disclose a method of constructing a halftone screen comprising: defining a halftone screen frequency and screen angle according to a predetermined requirement (page 9, paragraph 124); defining a desired subcell having the predetermined frequency and screen angle requirement, wherein the subcell is substantially specified by two spatial vectors v.sub.1=(x.sub.1, y.sub.1) and v.sub.2=(x.sub.2, y.sub.2), wherein x.sub.1, x.sub.2, y.sub.1, and y.sub.2 are real numbers (Fig. 1, page 3, paragraph 45); forming a supercell comprising an array of the subcells, wherein the supercell is substantially specified by two spatial vectors u.sub.1 and u.sub.2 and wherein the relationship between the supercell and the subcell (page 3, paragraph 46) satisfies:k.sub.1v.sub.1+k.sub.2v.sub.2=u.sub.1- , and k.sub.3v.sub.1+k.sub.4v.sub.2=u.sub.2, where k.sub.1, k.sub.2, k.sub.3 and k.sub.4 are integer values (Fig. 2, page 6, paragraph 66).

Referring to claim 3, Cheng et al. disclose the method of claim 1, wherein the step of solving the supercell-subcell relationship comprises directly searching for solutions (page 6, paragraph 66).

Referring to claim 4, Cheng et al. disclose the method of claim 1, wherein a plurality of supercell solutions are determined and further comprising: applying a constraint to the determined solutions (S110 of Fig. 5, page 5, paragraph 70); and removing supercell solutions that do not satisfy the constraints (S120 of Fig. 5, page 5, paragraph 70).

Referring to claim 5, Cheng et al. disclose the method of claim 4, further comprising selecting a supercell solution that satisfies the constraint and creating a halftone screen using the selected supercell (S160 of Fig. 5, page 5, paragraph 72).

Referring to claim 6, Cheng et al. disclose a method of constructing a halftone screen comprising: selecting a frequency and screen angle of interest (page 9, paragraph 124); identifying a subcell by spatial vectors which satisfies the selected frequency and screen angle of interest (Fig. 1, page 3, paragraph 45); forming a supercell comprising an array of the subcells, wherein an integer relationship exists between the supercell and the subcells (page 3, paragraph 46); solving the integer relationship (Fig. 2, page 6, paragraph 66); testing one of any resulting solutions according to any additional constraints or tolerances (page 9, paragraph 125); and if any of the resulting solutions satisfies the testing, creating a halftone screen using the tested solution (S160 of Fig. 5, page 5, paragraph 72).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Trask U.S. Patent 6,249,355 as applied to claim 1 above, and further in view of Curry U.S. Patent 5,710,636.

Referring to claim 3, Trask discloses solving the supercell-subcell relationship, but does not disclose expressly utilizing direct searching. Curry discloses selecting a shape for a halftone that provides a desired result (col. 2, lines 56-65). Trask and Curry are combinable because they are in the same field of halftoning. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to utilize direct searching to obtain halftoning solutions. The motivation for doing so would have been to reduce the time needed to generate all solutions by reducing the possible solutions. Further, direct searching is simply one of many generic methods of determining a solution. Therefore, it would have been obvious to combine Curry with Trask to obtain the invention as specified in claim 3.

5. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trask U.S. Patent 6,249,355.

Referring to claim 4, Trask discloses applying a constraint to the determined solutions (col. 13, lines 53-67). Trask does not disclose expressly removing supercell solutions that do not satisfy the constraints. It would have been obvious at the time of the invention to remove solutions that do not meet a constraint. The motivation for doing so would have been to free up memory by clearing the memory of tables that are not currently needed. Further, eliminating solutions from a solution set is commonly utilized in mathematics and computer programming.

Referring to claim 5, Trask discloses the method of claim 4, further comprising selecting a supercell solution that satisfies the constraint and creating a halftone screen using the selected supercell (col. 13, lines 53-67).

Conclusion

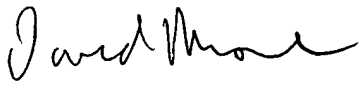
6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Schiller U.S. Patent 5,235,435

Sano et al. U.S. Patent 6,072,590

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter K. Huntsinger whose telephone number is (571)272-7435. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on (571)272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



DAVID MOORE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

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PKH